

19 to 25 January, 2014 (Week 04)

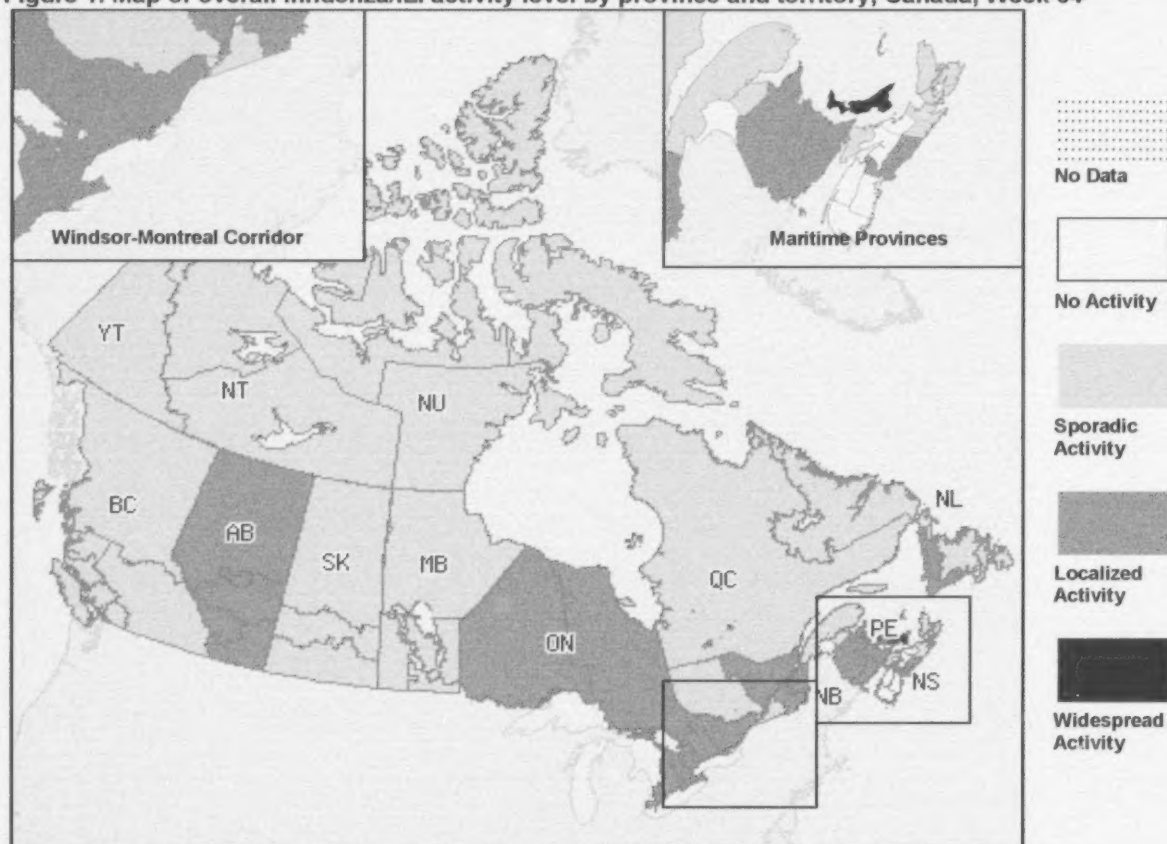
Overall Summary

- In week 04, overall influenza activity decreased in Canada, particularly in western Canada and Ontario which experienced an earlier start to the influenza season. Prince Edward Island was the only province reporting widespread influenza activity.
- The influenza A(H1N1) virus remains the most common influenza virus circulating this season.
- Overall influenza activity in Canada during the 2013-14 season has been similar to the 2012-13 season and is within expected levels for this time of year, although adults 20-64 years of age have been more affected by influenza this season.
- To date this season, 2,298 influenza-associated hospitalizations and 113 deaths have been reported by participating provinces and territories.

Influenza/ILI Activity (geographic spread)

In week 04, Prince Edward Island reported widespread activity, and 22 regions (in AB(5), ON(7), QC(3), NB(5), NS(1) and NL(1)) reported localized activity (Figure 1). Compared to week 03, activity was stable or decreased in regions in BC, AB, SK, ON and NT; stable in MB and YT; and stable or increased in regions in QC, NS, NB, NL. A mixed pattern of activity was reported among regions in NU.

Figure 1. Map of overall influenza/ILI activity level by province and territory, Canada, Week 04

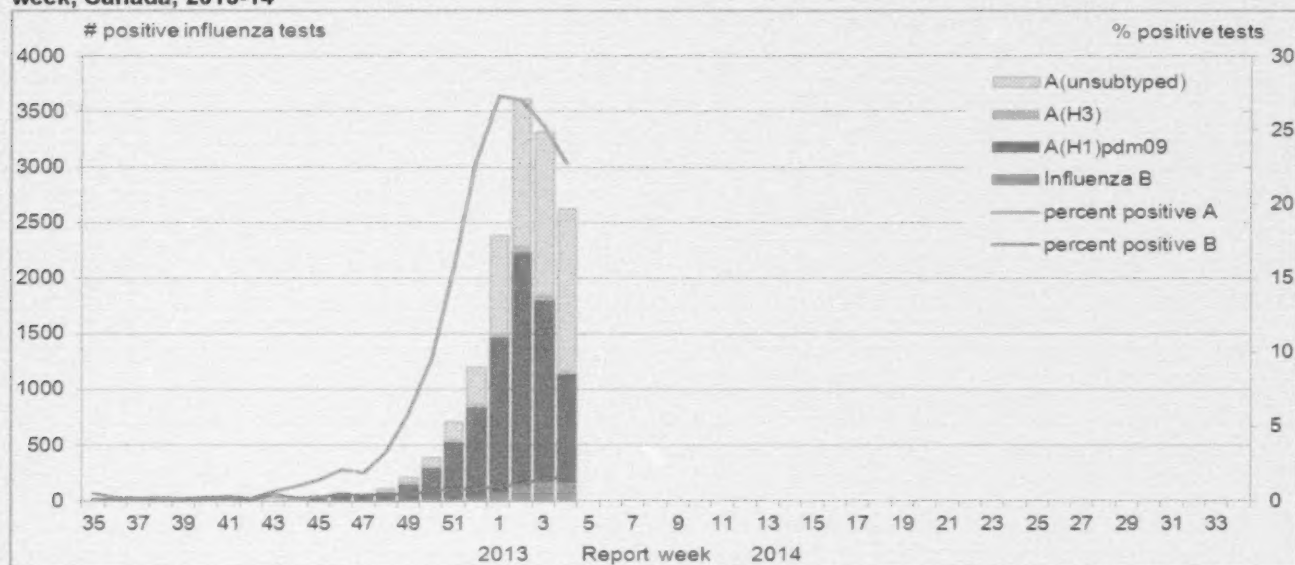


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available on the [FluWatch website](#).

Influenza and Other Respiratory Virus Detections

The number of positive influenza tests decreased for the second week in a row, from 3,313 in week 03 to 2,620 in week 04. The percentage of positive influenza tests decreased from 26.7% to 24.3% (Figure 2). Cumulative influenza virus detections to date remain predominantly influenza A (95%), and among those subtyped, 97% (8,029/8,274) were A(H1N1)pdm09. However, the percentage of positive tests for influenza B has been rising slowly in recent weeks to 6.5% of influenza detections in week 04 (Table 1). Among the 11,889 cases for which information on age and type/subtype has been received this season, 58.7% were 20-64 years of age and 15.5% were ≥ 65 years of age, which is different from the proportions observed during the 2012-13 season when 33.3% of cases were 20-64 years of age and 41.5% were ≥ 65 years of age (Table 2).

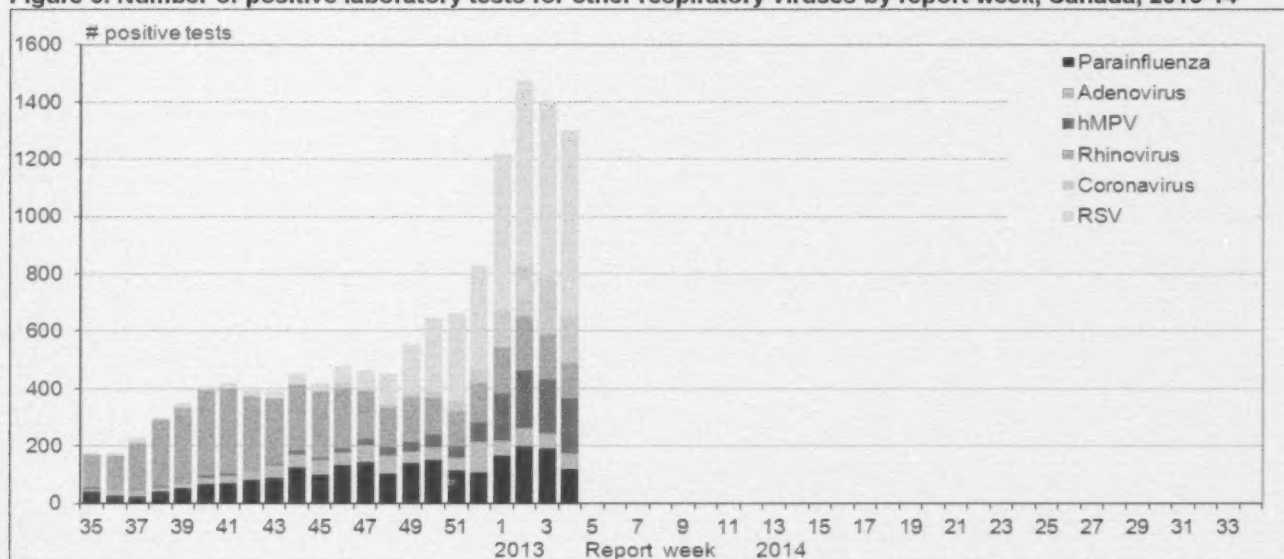
Figure 2. Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2013-14



The number of positive tests for RSV has been stable for the past three weeks, but the percentage of the total number of tests that were positive increased in week 04. RSV in Canada shows a seasonal pattern with a broad peak over the winter months, and the current fluctuations are in keeping with the trend over recent years. The percentage of positive tests for coronavirus and human metapneumovirus increased in week 04, while detections of other respiratory viruses were stable or declining (Figure 3).

For more details, see the weekly [Respiratory Virus Detections in Canada Report](#).

Figure 3. Number of positive laboratory tests for other respiratory viruses by report week, Canada, 2013-14



RSV: Respiratory syncytial virus; hMPV: Human metapneumovirus

Table 1. Weekly and cumulative numbers of positive influenza specimens by type, subtype and province, Canada, 2013-14

Reporting provinces ¹	Weekly (January 19 to 25, 2014)					Cumulative (August 25, 2013 to January 25, 2014)				
	Influenza A				B Total	Influenza A				B Total
	A Total	A(H1)pdm09	A(H3)	A(UnS)		A Total	A(H1)pdm09	A(H3)	A(UnS)	
BC	217	182	9	26	6	1362	1251	50	61	38
AB	280	228	1	51	7	3115	2968	29	118	43
SK	133	121	1	11	3	1083	781	1	301	4
MB	103	94	1	8	0	347	221	1	125	13
ON	520	187	13	320	12	4092	1959	159	1974	85
QC	702	101	0	601	110	2828	325	2	2501	476
NB	378	22	0	356	2	923	334	1	588	3
NS	19	19	0	0	0	63	43	2	18	0
PE	24	24	0	0	0	43	43	0	0	0
NL	75	0	0	75	29	205	104	0	101	82
Canada	2451	978	25	1448	169	14061	8029	245	5787	744
Percentage ²	93.5%	39.9%	1.0%	59.1%	6.5%	95.0%	57.1%	1.7%	41.2%	5.0%

Table 2. Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting³, Canada, 2013-14

Age groups (years)	Weekly (January 19 to 25, 2014)					Cumulative (August 25, 2013 to January 25, 2014)					Influenza A and B	
	Influenza A				B Total	Influenza A				B Total	#	%
	A Total	A(H1)pdm09	A(H3)	A (UnS)		A Total	A(H1)pdm09	A(H3)	A (UnS)			
<5	264	97	0	167	8	2041	1035	18	988	83	2124	17.7%
5-19	89	29	1	59	24	847	514	14	319	99	946	7.9%
20-44	325	121	1	203	20	3576	2094	19	1463	132	3708	30.9%
45-64	309	122	1	186	28	3068	1789	28	1251	200	3268	27.3%
65+	136	39	1	96	38	1562	704	55	803	281	1843	15.4%
Unknown	7	7	0	0	0	94	81	5	8	0	94	0.8%
Total	1,130	415	4	711	118	11188	6217	139	4832	795	11983	100.0%
Percentage ²	90.5%	36.7%	0.4%	62.9%	9.5%	93.4%	55.6%	1.2%	43.2%	6.6%		

¹ Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Cumulative data includes updates to previous weeks.

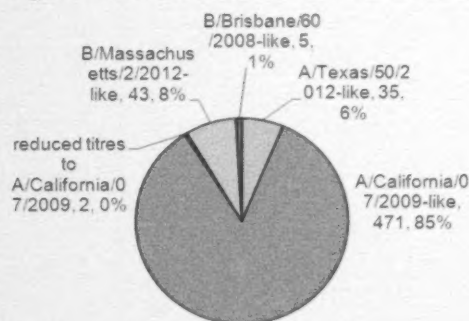
² Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.

³ Table 2 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. UnS: unsubtype: The specimen was typed as influenza A, but no result for subtyping was available.

Influenza Strain Characterizations

During the 2013-2014 influenza season, the National Microbiology Laboratory (NML) has antigenically characterized 556 influenza viruses [35 A(H3N2), 473 A(H1N1)pdm09 and 48 influenza B]. The vast majority (99%) of viruses were similar to the strains recommended by the WHO for the 2013-14 seasonal influenza vaccine. Two A(H1N1)pdm09 viruses showed reduced titres to antiserum against the reference A/California/07/2009 strain. Five influenza B viruses were similar to the strain recommended by the WHO for the 2011-12 vaccine (Figure 4).

Figure 4. Influenza strain characterizations, Canada, 2013-14, N = 556



The NML receives a proportion of the number of influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Characterization data reflect the results of haemagglutination inhibition (HAI) testing compared to the reference influenza strains recommended by WHO.

The recommended components for the 2013-2014 northern hemisphere trivalent influenza vaccine include: an A/Calfornia/07/2009(H1N1)pdm09-like virus, an A(H3N2) virus antigenically like the cell-propagated prototype virus A/Victoria/361/2011b (e.g. A/Texas/50/2012), and a B/Massachusetts/2/2012-like virus (Yamagata lineage).

Antiviral Resistance

During the 2013-2014 influenza season, NML has tested 397 influenza viruses for resistance to oseltamivir and 390 viruses for resistance to zanamivir, and all were sensitive. All 341 influenza A viruses tested for amantadine resistance were resistant (Table 3).

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2013-14

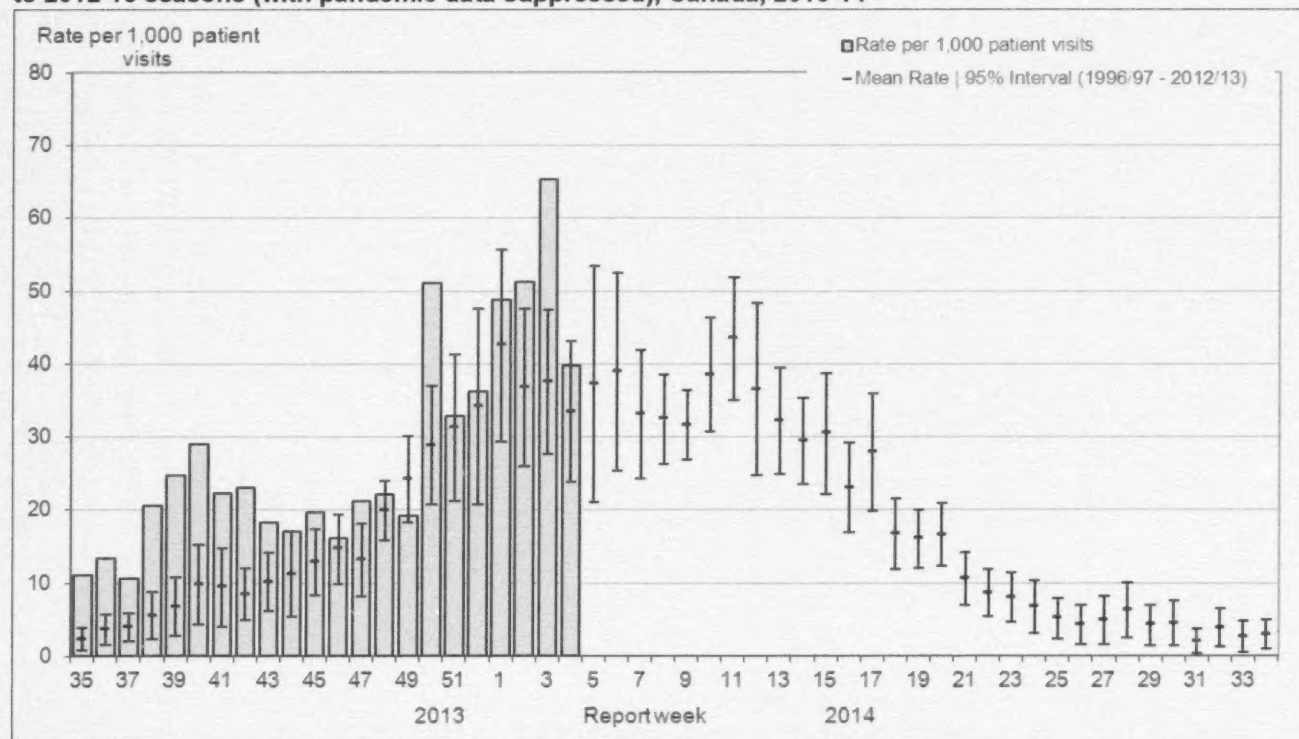
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	29	0	29	0	37	37 (100%)
A (H1N1)	325	0	319	0	304	304 (100%)
B	43	0	42	0	NA ¹	NA ¹
TOTAL	397	0	390	0	341	341 (100%)

¹ NA – not applicable

Influenza-like Illness Consultation Rate

The national influenza-like-illness (ILI) consultation rate decreased from 65.4/1,000 in week 03 to 39.8/1,000 in week 04; which is within the expected range for week 04 (Figure 5).

Figure 5. Influenza-like-illness (ILI) consultation rates by report week, compared to the 1996-97 through to 2012-13 seasons (with pandemic data suppressed), Canada, 2013-14

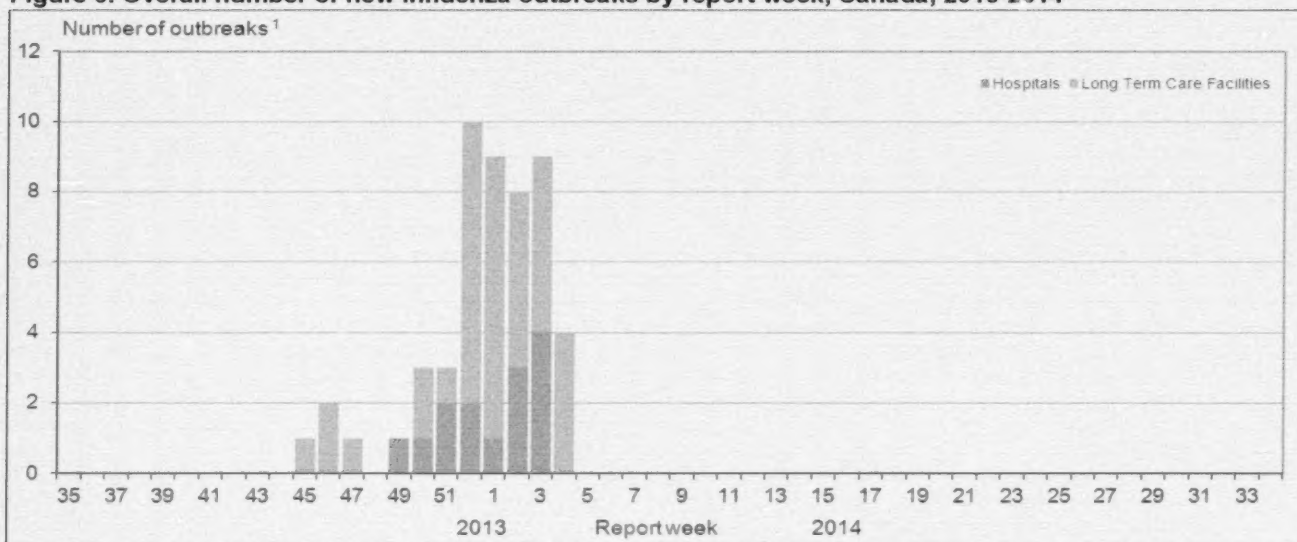


No data available for mean rate for weeks 19 to 39 for the 1996-1997 through 2002-2003 seasons. Delays in the reporting of data may cause data to change retrospectively. The calculation of the average ILI consultation rate over 17 seasons was aligned with influenza activity in each season. In BC, AB, and SK, data is compiled by a provincial sentinel surveillance program for reporting to FluWatch. The number of sentinel physicians in each province or territory is as follows: BC(21), AB(80), SK(11), MB(18), ON(169), QC(14), NB(29), NS(26), PE(4), NL(16), NU(1), NT(14), YT(13). Not all sentinel physicians report every week.

Influenza Outbreak Surveillance

In week 04, four new influenza outbreaks were reported in long-term care facilities (Figure 6). In addition, three outbreaks of influenza-like-illness were reported in other facilities or communities.

Figure 6. Overall number of new influenza outbreaks by report week, Canada, 2013-2014

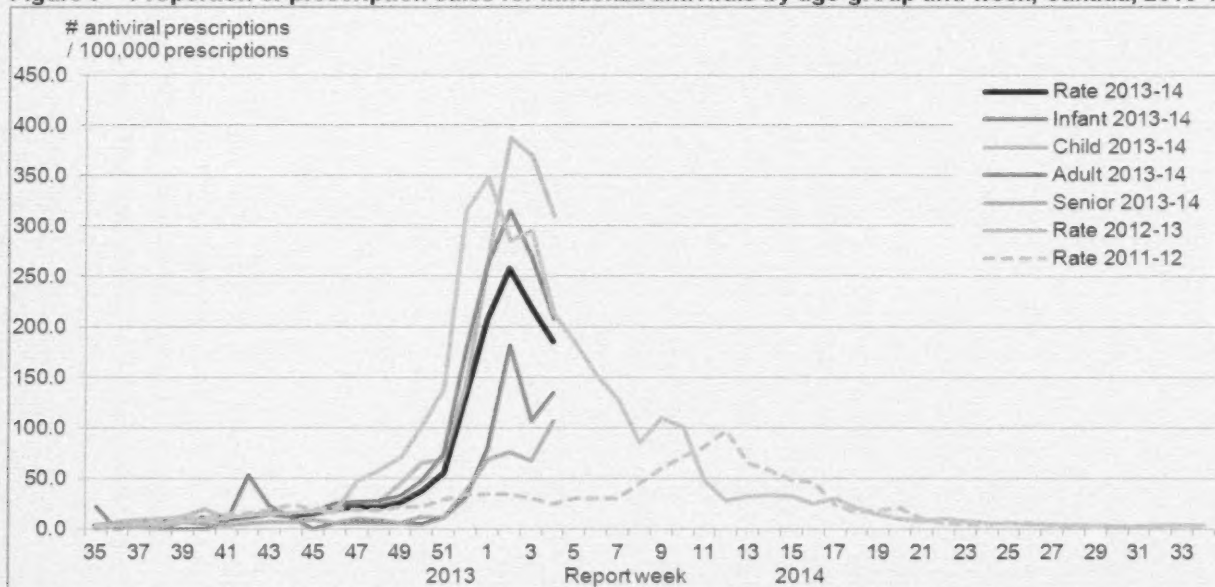


¹All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions. Outbreak definitions are included at the end of the report.

Pharmacy Surveillance

The rate of prescriptions for influenza antivirals declined for the second week in a row, following the downward trend in laboratory detections of influenza. In week 04, the largest proportion of prescriptions for antivirals continued to be among children 2-18 years of age followed by adults 19-64 years of age. The proportion of prescriptions for antivirals increased for infants <2 years of age and adults ≥65 years of age in week 04 (Figure 7).

Figure 7 – Proportion of prescription sales for influenza antivirals by age-group and week, Canada, 2013-14



Note: Pharmacy sales data are provided to the Public Health Agency of Canada by Rx Canada Inc. and sourced from major retail drug chains representing over 2,500 stores nationwide (excluding Nunavut) in 85% of Health Regions. Data provided include the number of new antiviral prescriptions (for Tamiflu and Relenza) and the total number of new prescriptions dispensed by Province/Territory and age group. Age-groups: Infant: 0-2y, Child: 2-18y; Adult: 19-64y, Senior: ≥65y

Sentinel Hospital Influenza Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

In week 04, 51 new laboratory-confirmed influenza-associated paediatric (≤ 16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, compared to 62 in week 03. All but three of the hospitalizations in week 04 were cases with influenza A (Figure 8a). Thirty-two (63%) of the cases were < 5 years of age. Eleven ICU admissions were reported in week 04, one child under 6 months of age, two children 6-23 months of age, two 2-4 years of age, and six 5-9 years of age; all but one with influenza A. No deaths were reported.

To date this season, a total of 359 influenza-associated paediatric hospitalizations have been reported by the IMPACT network, 95% of which have been influenza A, and almost all of those subtyped were A(H1N1)pdm09 (Table 4). Two hundred and eighty cases (78%) have been under 5 years of age. Fifty-eight ICU admissions have been reported; all but three cases with influenza A (the majority A(H1N1)pdm09), and 44.8% have been among children under 2 years of age (Figure 9a). Among the 52 ICU cases with available data, 35 (67%) were reported to have underlying medical conditions. No deaths have been reported.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated paediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths (PCIRN)

In week 04, 60 new laboratory-confirmed influenza-associated adult (≥ 16 years of age) hospitalizations reported through active surveillance by the PHAC/CIHR Influenza Research Network (PCIRN) Serious Outcomes Surveillance (SOS) network, compared to 99 in week 03. Among cases in week 04, 56 (93.3%) were influenza A, of which 12 were A(H1N1)pdm09, one was A(H3N2) and 43 were A(unsubtyped). Two cases with influenza B were reported (Figure 8b). Almost half of the hospitalizations occurred among adults 45-64 years (29; 48.3%). Four ICU admissions were reported in week 04: three cases 45-64 years of age and one case ≥ 65 years of age. No deaths were reported.

To date this season, 645 influenza-associated hospitalizations have been reported by the PCIRN-SOS network, 619 (96.0%) with influenza A, predominantly A(H1N1)pdm09 (Table 5). ICU admission was required for 101 hospitalizations, the majority of which were influenza A. Three quarters of hospitalizations and over 80% of ICU admissions were ≥ 45 years of age. Of the 67 ICU admissions with available information, 83.5% (56/67) were reported to have at least one comorbidity. Of the 86 ICU admissions with information on influenza vaccination, 58 (67%) reported not having been vaccinated this season. Twenty deaths have been reported, all with influenza A (13 A(H1N1)pdm09 and 7 A(unsubtyped)); ten cases 45-64 years of age, and ten cases ≥ 65 years of age (Figure 9b).

Note: PCIRN-SOS conducted passive surveillance from April 30th to November 14th, 2013. Cases reported during this period were identified by laboratory detection of influenza among patients admitted to participating hospitals. Active surveillance began November 15th during which time PCIRN site coordinators investigate cases potentially related to influenza. Data from both active and passive surveillance reported during the 2013-14 season are included in this report. The number of hospitalizations reported through PCIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Table 4 – Cumulative numbers of paediatric hospitalizations with influenza reported by the IMPACT network, Canada, 2013-14

Age groups	Cumulative (25 Aug. 2013 to 25 Jan. 2014)					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-5m	71	19	0	52	2	73 (20%)
6-23m	97	33	0	64	4	101 (28%)
2-4y	99	35	2	62	7	106 (30%)
5-9y	51	18	0	33	4	55 (15%)
10-16y	22	10	0	12	2	24 (7%)
Total	340	115	2	223	19	359
% ¹	94.7%	33.8%	0.6%	65.6%	5.3%	100.0%

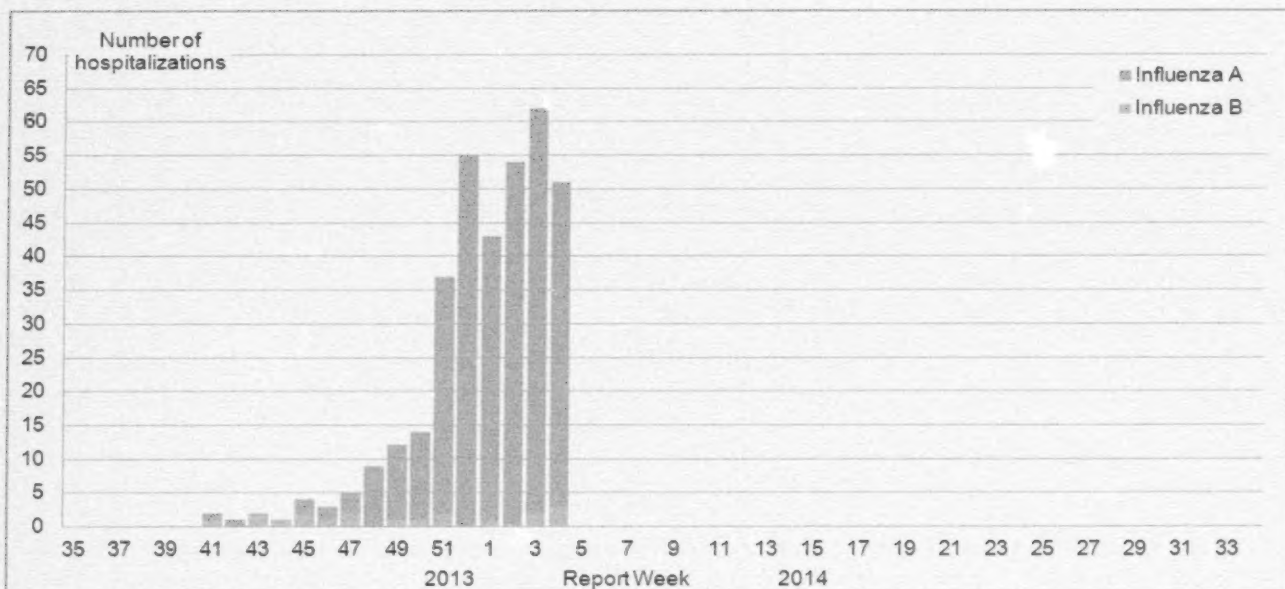
Table 5 – Cumulative numbers of adult hospitalizations with influenza reported by the PCIRN-SOS network, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 25 Jan. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A(UnS)	Total	# (%)
16-20	3	2	0	1	1	4 (1%)
20-44	143	73	2	68	2	145 (23%)
45-64	248	97	3	148	4	252 (40%)
65+	220	98	9	113	13	233 (37%)
Total	614	270	14	330	20	634
% ¹	97%	44%	2%	54%	3%	100%

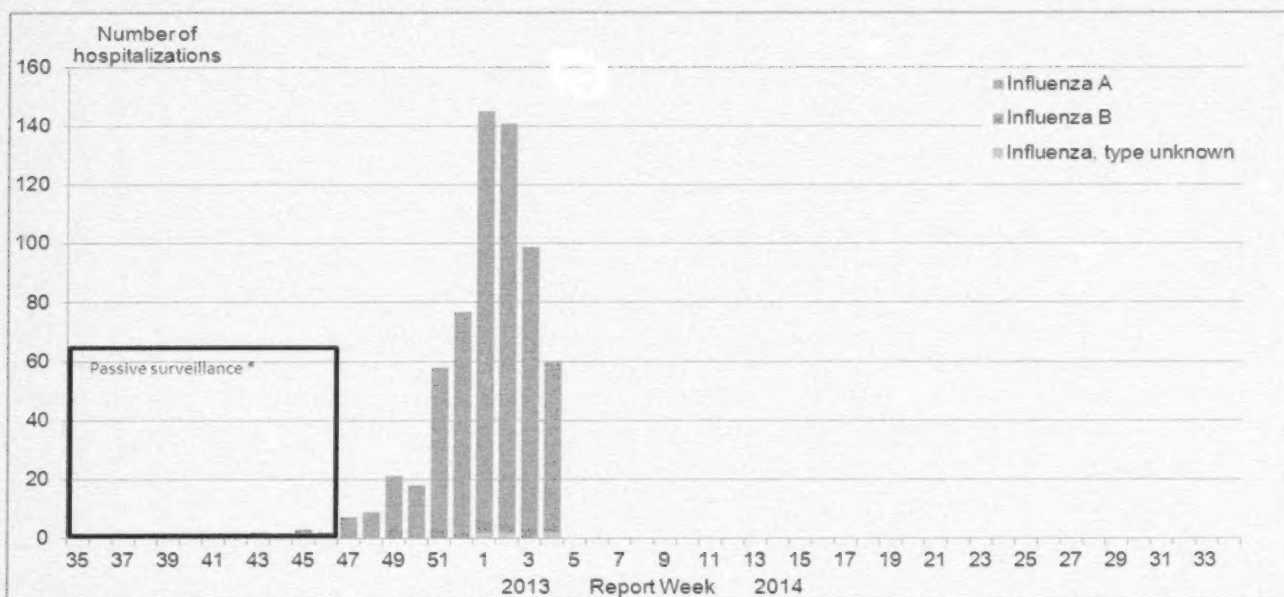
¹ Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections. UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available. * Six cases for which the influenza type has not yet been reported, and five cases for which the age-group was not reported, are not included in Table 5.

Figure 8 – Number of cases of influenza reported by sentinel hospital networks, by week, Canada, 2013-14

A) Paediatric hospitalizations (≤ 16 years of age, IMPACT)



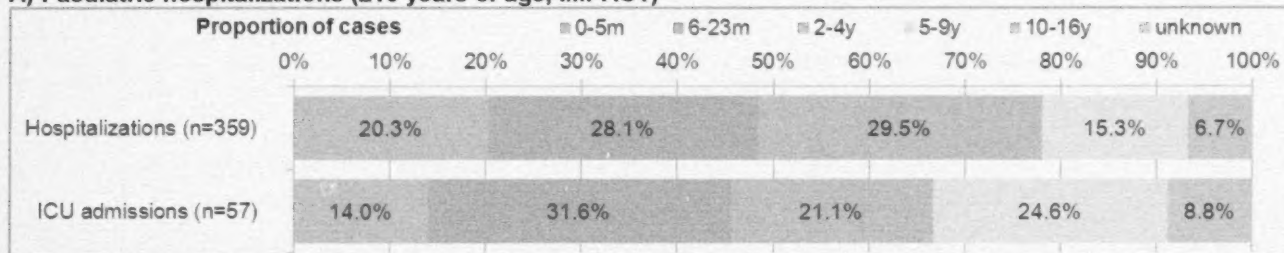
B) Adult hospitalizations (≥ 16 year of age, PCIRN-SOS)



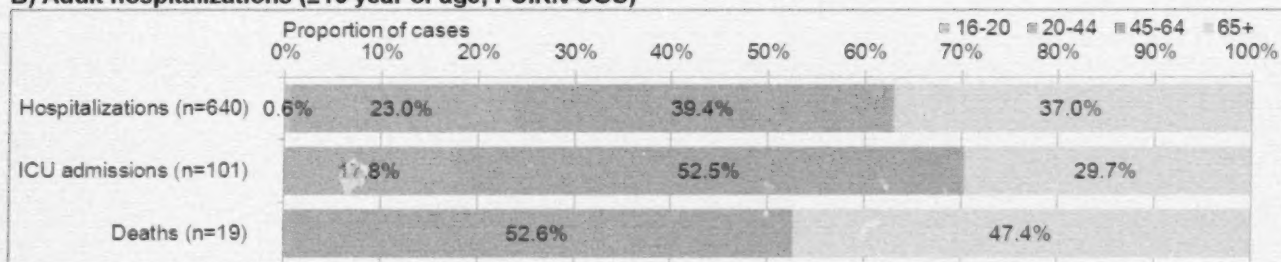
* See footnote on page 6 following the section related to PCIRN-SOS data.

Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza reported by age-group, Canada, 2013-14

A) Paediatric hospitalizations (≤ 16 years of age, IMPACT)



B) Adult hospitalizations (≥16 year of age, PCIRN-SOS)



Provincial/Territorial Influenza Hospitalizations and Deaths

In week 04, 302 laboratory-confirmed influenza-associated hospitalizations were reported from participating provinces and territories.* The majority were cases of influenza A (293, 97.0%), of which 169 (57.7%) were A(H1N1)pdm09, 11 (3.8%) were A(H3N2), and 113 (38.6%) were A(unsubtyped). Among the 20 ICU admissions reported in week 04, 14 (70%) were adults 20-64 years of age. Twenty-six deaths were reported, half of which were adults 20-64 years of age. The number of new influenza-associated hospitalizations and deaths reported for the current week may include cases from Ontario that occurred in previous weeks, as a result of retrospective updates to the cumulative total.

To date this season, 2,298 influenza-associated hospitalizations have been reported, 97.7% with influenza A. The majority (58%) of hospitalizations have been cases 45 years of age or older (Table 6). A total of 217 ICU admissions have been reported this season: 77% were among adults 20-64 years of age. One hundred and thirteen deaths have been reported. The highest proportion of deaths has been among adults 20-64 years of age (51%), followed by adults ≥65 years of age (37%). Influenza B has been detected infrequently among severe cases of influenza to date this season: in only 2.3% of hospitalizations, 1.1% of ICU admissions, and 1.0% of deaths. It is important to note that the hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting. Detailed clinical information (e.g. underlying medical conditions) is not known for these cases.

* Note: Influenza-associated hospitalizations are not reported to PHAC by the following Provinces and Territory: BC, NU, QC, and NB. Only hospitalizations that require intensive medical care are reported by Saskatchewan. ICU admissions are not distinguished among hospital admissions reported from Ontario. Data may also include cases reported by the IMPACT and PCIRN networks.

Table 6 – Cumulative number of hospitalizations with influenza reported by the participating provinces and territories, Canada, 2013-14

Age groups (years)	Cumulative (25 Aug. 2013 to 25 Jan. 2014) *					
	Influenza A				B	Influenza A and B
	A Total	A(H1) pdm09	A(H3)	A (UnS)	Total	# (%)
0-4	393	205	5	183	14	407 (18%)
5-14	80	46	3	31	3	83 (4%)
15-19	25	16	1	8	1	26 (1%)
20-44	395	303	3	89	3	398 (18%)
45-64	739	498	12	229	7	746 (33%)
65+	564	334	37	193	25	589 (26%)
Total	2196	1402	61	733	53	2249
Percentage¹	97.6%	63.8%	2.8%	33.4%	2.4%	100%

¹ Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.

UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.

* Forty-nine cases for which age information is not available have not been included in Table 6.

See additional data on [Reported Influenza Hospitalizations and Deaths in Canada: 2009-10 to 2013-14](#) on the Public Health Agency of Canada website.

Emerging Respiratory Pathogens

Human Avian Influenza

Influenza A(H7N9): Forty new cases of human infection with influenza A(H7N9), and one death, have been reported by the World Health Organization since the last FluWatch report. Globally to January 30, 2014, the WHO has been informed of a total of 259 laboratory-confirmed human cases with avian influenza A(H7N9) virus, including 56 deaths.

PHAC – Avian influenza A(H7N9)

WHO – Avian Influenza A(H7N9)

Influenza A(H10N8): The WHO reported a human case of avian influenza A(H10N8) virus in China in a female aged 45-64 years. The case visited a live poultry market in January 2014 and had no exposure to similar cases before onset of symptoms. Family members and other contacts have no symptoms. This is the second human case of A(H10N8) reported in China. The specific source of the infection is unknown. As wild birds/poultry have been known to carry this virus, further sporadic cases may be detected.

Middle East Respiratory Syndrome Coronavirus (MERS-CoV)

Two additional cases of MERS-CoV, and two deaths have been reported by the World Health Organization since the last FluWatch report. Globally, from September 2012 to date, the WHO has been informed of a total of 181 laboratory-confirmed cases of infection with MERS-CoV, including 78 deaths. All cases have either occurred in the Middle East or have had direct links to a primary case infected in the Middle East.

PHAC – Middle East respiratory syndrome coronavirus (MERS-CoV)

WHO – Coronavirus infections

International Influenza Reports

World Health Organization influenza update

World Health Organization FluNet

WHO Influenza at the human-animal interface

Centers for Disease Control and Prevention seasonal influenza report

EuroFlu weekly electronic bulletin

European Centre for Disease Prevention and Control - epidemiological data

South Africa Influenza surveillance report

New Zealand Public Health Surveillance

Australia Influenza Report

Pan-American Health Organization Influenza Situation Report

FluWatch Definitions for the 2013-2014 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

- **Schools:** Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.
- **Hospitals and residential institutions:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.
- **Workplace:** Greater than 10% absenteeism on any day which is most likely due to ILI.
- **Other settings:** two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region†**

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region†**

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: <http://www.phac-aspc.gc.ca/fluwatch/index.html>.

Ce rapport est disponible dans les deux langues officielles.